CLAIMS

1. A liquid composition which can be polymerized, by means of radical polymerization with low shrinkage, into organic glasses, comprising the product obtained from the transesterification of a diallylcarbonate (A) with a mixture of one or more linear or branched aliphatic diols (B), containing from three to ten carbon atoms in the molecule with a linear or branched aliphatic polyol (C), containing from four to twenty carbon atoms and from three to six hydroxyl groups in the molecule,

~~2. The composition according to claim 1, wherein the molar ratio A/(B+C) ranges from 2/1 to 5/1 and the quantity of (C) in the mixture (B+C) is equal to or less than 25% by weight with respect to the total weight of said mixture (B+C).~~

~~3. The composition according to claim 2,~~ wherein the molar ratio (A)/(B+C) ranges from 2.5/1 to 4/1 and the quantity of (C) in the mixture (B+C) ranges from 5% by weight to 20% by weight with respect to the total weight of said mixture (B+C).

2 4. The composition according to claim 1, ~~2 or 3,~~ wherein the diols (B) are: diethylene glycol, triethylene glycol, tetraethylene glycol, 1,4-butanediol, 1,6-hexanediol, 1,3-propanediol, neopentylglycol, dipropyle-

neglycol, 2,2,4-trimethyl-1,3-pentanediol.

3 ~~8~~. The composition according to claim 2 ~~1~~, wherein the diols are diethylene glycol and neopentylglycol.

SUB A1 4 ~~5~~. The composition according to any of the previous claims, wherein the polyols (C) are: pentaerythritol, trimethylolpropane, dipentaerythritol, ditrimethylolpropane, tris(hydroxyethyl)isocyanurate.

5 ~~7~~. The composition according to claim 4 ~~6~~, wherein the polyols are pentaerythritol and trimethylolpropane.

SUB A2 6 ~~8~~. The composition according to any of the previous claims, obtained starting from diallyl carbonate (A) and from the mixture (B+C) operating under transesterification conditions, at a temperature ranging from 80°C to 160°C, in the presence of a catalyst of the alkaline type, and continuously eliminating the allyl alcohol which is formed as reaction by-product.

7 ~~9~~. The composition according to claim 6 ~~8~~, wherein the transesterification is carried out at a temperature ranging from 90°C to 130°C, and the catalyst of the alkaline type is selected from: hydroxides, carbonates and alcoholates of alkaline metals, organic bases, basic ion-exchange resins.

8 ~~10~~. The composition according to claim 7 ~~9~~, wherein the catalyst of the alkaline type is selected from: sodium hydroxide, sodium carbonate, sodium methylate.

SUB A3 9 12. The composition according to any of the claims from 6 8 to 8 10, wherein the catalyst is used in a quantity equal to at least 1 ppm (parts per million by weight) with respect to the sum of the weights of components (B+C).

10 12. The composition according to claim 9 11, wherein the catalyst is used in a quantity ranging from 0.01% to 0.3% by weight with respect to the sum of the weights of components (B+C).

SUB A4 10 11 13. The composition according to any of the claims from 6 8 to 10 12, wherein the transesterification reaction is carried out at pressure values ranging from 60 mbar to 1030 mbar.

12 14. The composition according to claim 11 13, wherein the transesterification reaction is carried out at pressure values ranging from 60 mbar to 500 mbar.

SUB A5 13 15. The composition according to any of the claims from 6 8 to 12 14, wherein the reaction times range from 0.5 hours to 20 hours.

14 16. The composition according to claim 13 15, wherein the reaction times range from 0.5 hours to 3 hours.

SUB A6 15 17. The composition according to any of the previous claims, wherein one or more conventional additives are present, such as oxidization, light and heat stabilizers, lubricants, dyes, pigments, UV-absorbers, IR-

absorbers, and the like, in a total quantity however not exceeding 1 part by weight for every 100 parts by weight of the compositions themselves.

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~~18~~. The composition according to any of the previous claims, wherein one or more polymerization initiators are present, which are soluble in the composition itself and are capable of generating free radicals within a temperature range of 30°C to 120°C.

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~~19~~. The composition according to claim ~~18~~, wherein the polymerization initiators belong to the group of peroxides.

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~~20~~. The composition according to claim ~~19~~, wherein the peroxides are: dicyclohexylperoxydicarbonate, diisopropylperoxydicarbonate, dibenzoylperoxide, di-s-butyl-peroxydicarbonate, s-butyl-cyclohexylperoxydicarbonate.

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~~21~~. The composition according to claim ~~18~~, wherein the polymerization initiators are perketals.

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~~22~~. The composition according to claim ~~21~~, wherein the perketals are: 1,1-di-(t-butylperoxy)-cyclohexane, 1,1-di-(t-butylperoxy)-3,3,5-trimethyl-cyclohexane, 1,1-di-(t-amyl-peroxy)-cyclohexane, 1,1-di-(t-butyl-peroxy)-2-methyl-cyclohexane, 1,1-di-(t-amylperoxy)-2-methylcyclohexane.

21 16
~~23~~. The composition according to any of the claims from ~~18~~

to 20, wherein the quantity of initiator used varies within a range of 1 to 6 parts by weight for every 100 parts by weight of said composition.

22. The composition according to any of the claims from 16 to 21, which are transformed into the relative organic glasses operating at a temperature ranging from 30°C to 120°C, with polymerization times which generally range from 1 hour to 100 hours.

23. Organic glasses obtained from the polymerization of the compositions according to any of the previous claims.

24. Ophthalmic lenses and solar filters, protective shields, sight windows, solar and photovoltaic collectors and panels, substrates for optical disks, panels for display, video terminals obtained from the processing of the organic glasses according to claim 23.

25. Use of a liquid composition which can be polymerized, by means of radical polymerization with low shrinkage, into organic glasses, comprising the product obtained from the transesterification of a diallylcarbonate (A) with a mixture of one or more linear or branched aliphatic diols (B), containing from three to ten carbon atoms in the molecule with a linear or branched aliphatic polyol (C), containing from four to twenty carbon atoms and from three to six hydroxyl groups in the molecule, wherein the molar ratio (A)/(B+C) ranges from 2.5/1 to 4/1 and the quantity of (C) in the mixture (B+C) ranges from 5% by weight to 20% by weight with respect to the total weight of said mixture (B+C), for manufacturing optical lenses.